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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,983	01/29/2004	Walter Schicketanz	54255	2801
26474 7590 08/24/2007 NOVAK DRUCE DELUCA & QUIGG, LLP 1300 EYE STREET NW SUITE 1000 WEST TOWER WASHINGTON, DC 20005			EXAMINER COCKS, JOSIAH C	
			ART UNIT 3749	PAPER NUMBER
			MAIL DATE 08/24/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/765,983

Applicant(s)

SCHICKETANZ, WALTER

Examiner

Josiah Cocks

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 8/20/2004
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings filed January 29, 2004 are accepted by the examiner.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 5 and 6 recite the limitation "the preheated exhaust stream" in lines 2 and 4. There is insufficient antecedent basis for this limitation in the claim. These claims were amended in the preliminary amendment filed January 29, 2004 to be dependent upon claim 1. However, it appears that applicant intended these claims to be dependent upon claim 4 which introduces that the exhaust gas is pre-heated. Accordingly, claims 5 and 6 have been regarded as being dependent upon claim 4 for the purpose of an examination on the merits.

Correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 1-5, 7, and 9** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. **Patent No. 3,146,821 to Wuetig** ("Wuetig") in view of U.S. **Patent No. 4,865,820 to Dunster et al.** ("Dunster").

Wuetig discloses in the specification and figure an invention considered to be analogous art to applicant's invention.

In particular, in regard to at least claim 1, Wuetig shows a process in which a combustible component (fuel, a combustible component) (through line 21) and a gas containing oxygen (air) are passed to a oxidation reactor (furnace 16) where the fuel and air, before being passed in to the furnace pass through a nozzle (13) that has a narrowed portions as illustrated in the figure and would function to increase the velocity of the feeds being passed into the furnace. Wuetig further discloses that the feed flows are controlled as desired (see col. 2, line 56 through col. 3, line 1). Wuetig also discloses that a flue/waste gas stream is recirculated to the high velocity path as a sub-stream of the flue gas liberated in the combustion in the furnace (see recirculation line 34).

In regard to the recitation that the flow velocity of the gas is higher than the flashback velocity, while Wuetig appears to suggest control of the velocity of the feeds, the reference does not describe that velocity is necessarily higher than the flashback velocity. Further, while Wuetig generally describes a fuel feed and air stream, the reference does not appear to describe that the streams are an "exhaust gas".

However, Dunster is cited to show a feed mixer and recirculation device that is analogous art to applicant's invention and Wuetig. In Dunster, a hydrocarbon feedstock stream undergoes partial oxidation (see col. 1, lines 6-11). While Dunster describes the use of the reactor with a raw hydrocarbon stream, Dunster also suggests that the oxidation process may be used with other feed means distinct from a raw stream (see col. 3, lines 46-57). Accordingly, the examiner considers that a person of ordinary skill in the art would reasonably conclude that an "exhaust gas" having a combustible component and oxidant component would readily be understood to be the type of additional feed that would be provided to the device of Dunster and would reasonably be a feed that would be combusted in the heat chamber of Wuetig.

Dunster further discloses that the stream of a first gas mixture desirably flow through a narrow passageway when mixed and combusted with a second gas so that the velocity of the first gas exceeds the flashback velocity of the mixture so as to prevent a flame from advancing from a reaction chamber to a mixing chamber (see col. 2, lines 6-60).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the process and apparatus of Wuetig to incorporate the adjustment of the velocity of the feed and air streams to be greater than the flashback velocity in order to prevent undesirable advancement of the flame to a mixing chamber (see Dunster, col. 1, lines 40-45 and col. 2, lines 6-60).

In regard to at least claim 2, it has been held that "where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation" (see MPEP 2144.05(II)(A) citing *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955)). Therefore, to have selected the velocity ratio of the high-

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velocity path to be either 1.2 times the flashback velocity would simply be a matter of optimizing the teachings of the prior art by routine experimentation.

In regard to at least claim 3, Wuetig discloses that the volume of the flue gas and the feeds to the chamber are variable (see col. 2, line 56 through col. 3, line 1, and col. 3, line 75 through col. 4, line 8).

In regard to at least claim 4, the feeds from fuel line (21) and air line (31) are pre-heated by the flue gas waste heat via both the heat recuperator (26) and contact with the flue gas at the exit of line (34). This disclosure suggests the pre-heating via a heat exchanger as recited.

In regard to at least claim 5, to have selected a specific preheating temperature is regarded as merely optimizing the pre-heating suggested by Wuetig, which as noted above is not regarded to patentably distinguish applicant's invention (see MPEP 2144.05(II)(A)).

In regard to at least claim 9, Wuetig and discloses an apparatus as recited including a feed line (21 and 31), an oxidation reactor (16), a high velocity path (13), a recirculation line (34) and a removal line (27) wherein as suggested by Dunster, the feed line would reasonably be construed to receive exhaust gas as recited.

6. Claims 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 3,146,821 to Wuetig ("Wuetig") in view of U.S. Patent No. 4,865,820 to Dunster et al. ("Dunster") as applied to claims 1 and 4 above, and further in view of U.S. Patent No. 5,905,180 to Yokoyama et al. ("Yokoyama").

Wuetig in view of Dunster disclose substantially all the limitations of claims 6 and 8 with the exception of how the exhaust gas originates.

Yokoyama teaches a catalytic oxidative process using a catalyst that results at least in part in a syngas (see at least col. 5, line 41) or feedstock for industrial processes (see col. 1, lines 19-21) that is regarded as an exhaust gas as recited and would operate as the feeds described in each of Wuetig and Dunster. Yokoyama specifies that the syngas/exhaust gas originates from a catalysed gas-phase oxidation that includes oxidation of n-butane (see Fig. 10) as recited.

Therefore, in regard to claims 6 and 8, it would have been obvious to a person of ordinary skill in the art to modify the feed gas of Wuetig to obtain a exhaust/syngas as taught in Yokoyama to result in a feedstock stream that that may be used in industrial processes (see Yokoyama col. 1, lines 19-21 and col. 5, line 41) including the combustion processes of Wuetig and Dunster.

Conclusion

7. This action is made non-final. A THREE (3) MONTH shortened statutory period for reply has been set. Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The patents cited on the attached PTO-892 and not relied upon are cited to further show the state of the art concerning combustion processes involving gas recirculation.


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9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Josiah Cocks whose telephone number is (571) 272-4874. The examiner can normally be reached on M-F 8:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven McAllister, can be reached (571) 272-6785. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

jcc
August 20, 2007


JOSIAH COCKS
PRIMARY EXAMINER
ART UNIT 3749